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incl_aux6_quo  THM

⊢  ∀R:(T→T→Prop).
|  (EquivRel x,y:T. x R y) ⇒
|  (∀Q:((x,y:T//(x R y))→(x,y:T//(x R y))→Prop).
|   (EquivRel u,v:x,y:T//(x R y). u Q v) ⇒ (EquivRel x,y:T. x Q y))
| by UnivCD
|
1. T : Type
2. R : T→T→Prop
3. EquivRel x,y:T. x R y
4. Q : (x,y:T//(x R y))→(x,y:T//(x R y))→Prop
5. EquivRel u,v:x,y:T//(x R y). u Q v
⊢  EquivRel x,y:T. x Q y
| by (MoveToConcl 5) THEN (Unfold `equiv_rel` 0)
|
4. Q : (x,y:T//(x R y))→(x,y:T//(x R y))→Prop
⊢  Refl(x,y:T//(x R y);u,v.u Q v)
|  & Sym u,v:x,y:T//(x R y). u Q v
|  & Trans u,v:x,y:T//(x R y). u Q v
|  ⇒
|  Refl(T;x,y.x Q y) & Sym x,y:T. x Q y & Trans x,y:T. x Q y
| by Unfolds [`refl`;`sym`;`trans`] 0
|
⊢  (∀a:x,y:T//(x R y). a Q a)
|  & (∀a,b:x,y:T//(x R y). (a Q b) ⇒ (b Q a))
|  & (∀a,b,c:x,y:T//(x R y). (a Q b) ⇒ (b Q c) ⇒ (a Q c))
|  ⇒
|
|  (∀a:T. a Q a)
|  & (∀a,b:T. (a Q b) ⇒ (b Q a))
|  & (∀a,b,c:T. (a Q b) ⇒ (b Q c) ⇒ (a Q c))  by GenRepD
|
|\
| 5. ∀a:x,y:T//(x R y). a Q a
| 6. ∀a,b:x,y:T//(x R y). (a Q b) ⇒ (b Q a)
| 7. ∀a,b,c:x,y:T//(x R y). (a Q b) ⇒ (b Q c) ⇒ (a Q c)
| 8. a : T
| ⊢  a Q a  by BackThru 5
|
|\
| 5. ∀a:x,y:T//(x R y). a Q a
| 6. ∀a,b:x,y:T//(x R y). (a Q b) ⇒ (b Q a)
| 7. ∀a,b,c:x,y:T//(x R y). (a Q b) ⇒ (b Q c) ⇒ (a Q c)
| 8. a : T
| 9. b : T
| 10. a Q b
| ⊢  b Q a  by BackThru 6
|
.\
. 5. ∀a:x,y:T//(x R y). a Q a
. 6. ∀a,b:x,y:T//(x R y). (a Q b) ⇒ (b Q a)
. 7. ∀a,b,c:x,y:T//(x R y). (a Q b) ⇒ (b Q c) ⇒ (a Q c)
. 8. a : T
. 9. b : T
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. 10. c : T
. 11. a Q b
. 12. b Q c
. ⊢  a Q c  by FwdThru 7 [11;12]
END
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